Genomic testing can identify African American prostate cancer patients who have high-risk disease

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African American men tend to be diagnosed more frequently with prostate cancer and have higher mortality rates than men of other races

and ethnicities. Despite this substantial cancer disparity, few prospective studies focused on maximizing the recruitment of African American men have been conducted to address this problem. It is important to identify those men who are at higher risk of poorer outcomes to improve treatment management and overall survival.

Moffitt Cancer Center has conducted the first prospective study to investigate genomic biomarkers associated with aggressive disease in African American men with prostate cancer. The study results were published in *JNCI: Journal of the National Cancer Institute*.

Prostate cancer is the most common cancer among men in the United States, with approximately 268,490 new cases expected in 2022. Many men with prostate cancer have good outcomes during treatment and can live long, cancer-free lives; however, some men, including African Americans, have more aggressive disease and poorer outcomes.

Physicians typically determine how aggressive a tumor is based on an examination of tissue samples of cancer cells. The tissue samples are graded on a scale according to their appearance with Grade group 1 (Gleason score 6 or less) being nonaggressive through Grade group 5 (Gleason score of 10) being most aggressive. Additional tests, such as bone, MRI and positron emission tomography scans, are also performed to determine whether the cancer has spread. However, these examinations and tests are not optimal to identify aggressive disease because they rely on features of the tumor cells and clinical factors, not on differences in tumor genomic patterns that are associated with poorer outcomes.

Recently, scientists developed a genomic biomarker test called the Decipher score that assesses the expression patterns of 22 genes associated with an increased risk of metastatic disease. Patients who have low genomic risk disease can be treated with less intensive therapy

to limit unwanted side effects, while patients who have a higher genomic risk of poorer outcomes can be treated with more intensive treatment to improve overall survival.

The Decipher score was developed with a patient group that was predominantly white, though additional retrospective studies that analyzed historical data found that the Decipher score was able to determine genomic risk among African American men with similar predictive performance. While these retrospective studies are promising, ideally prospective studies that follow the outcomes of patients over time are more accepted.

A team of Moffitt researchers led by Kosj Yamoah, M.D., Ph.D., chair of Moffitt's Radiation Oncology Department, wanted to assess whether the Decipher score was an appropriate test to use for African American men in a prospective study. They partnered with two Tampa area veterans hospitals—James A. Haley Veterans' Hospital and Bay Pines VA Healthcare System—to enroll patients, which included 113 African American men and 113 non-African American men who had clinically low- or intermediate-risk prostate cancer based on clinical features.

They discovered that a higher proportion of African American men had a higher Decipher score than non-African American men. Furthermore, men who self-identified as African American were twice as likely to be reclassified with higher risk disease based on results from the Decipher score than men who self-identified as non-African American. The researchers also conducted a DNA ancestry study and confirmed that a subset of men with African ancestry were over five times as likely to undergo reclassification based on Decipher score results than non-African American men.

This research confirms that using clinical data alone is not sufficient to identify a subset of patients who are at a higher risk of poor outcomes.

These approaches likely miss many patients who have more aggressive disease and may result in treatment approaches that are not as effective.

"This study demonstrates the power of using genomic approaches, such as the Decipher score, to classify risk in African American men and improve patient outcomes," said Yamoah. "Our results support the integration of personalized biomarkers with conventional clinical risk classifiers, particularly for African American men, to optimize timely detection of genomically aggressive prostate cancer and guide appropriate treatment recommendations."

More information: Shivanshu Awasthi et al, Genomic testing in localized prostate cancer can identify subsets of African-Americans with aggressive disease, *JNCI: Journal of the National Cancer Institute* (2022). DOI: 10.1093/jnci/djac162

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